HAZARD'S
REGISTER OF PENNSYLVANIA.

DEVOTED TO THE PRESERVATION OF EVERY KIND OF USEFUL INFORMATION RESPECTING THE STATE.

EDITED BY SAMUEL HAZARD.

VOL. XI—NO. 16. PHILADELPHIA, APRIL 20, 1833. NO. 277.

CANALS AND RAIL-ROADS COMPARED.

To the Canal Proprietors

And the Traders on the Canals in the line of the projected Rail-way between London and Birmingham.

Gentlemen—I have been led to address you in consequence of perusing a printed statement, entitled "Summary of the evidence led in proof of the Preamble of the bill for making the London and Birmingham rail-way," circulated by the subscribers to the rail-way, who have appended to it *a copy of the report for the year* 1831, *of the Directors of the Liverpool and Manchester rail-way.*

On considering this document, I observe that the revenue of the new projected rail-way is expected to arise from two sources, the first of which is the engrossing of the whole existing traffic on the turnpike roads, at present carried on by coaches, post carriages, vans, waggons, &c.

In the case of the Liverpool and Manchester rail-way, all this trade has been *taken from the turnpike roads* connecting these two towns; and *from the coachmasters, postmasters, and van and waggon carriers;* and the whole is now entered in, and carried on by *one joint stock partnership*, the Liverpool and Manchester rail-way company, who are now the *sole coach and postmasters, and van and waggon carriers*, between Liverpool and Manchester. The *amount of profits derived from the trades and occupations*, now go to make up *a dividend to the Liverpool and Manchester rail-way shareholders.*

It is taken for granted that the same thing must take place on the turnpike road traffic between London and Birmingham and though the London and Birmingham rail-way is not like the Liverpool and Manchester rail-way, six miles shorter, but is (including the distance to be traversed at each of its terminations) eight or nine miles longer than the turnpike road—this conclusion may be considered as a fair one, and it may be predicted, that the whole, or a very large proportion *of the coaching and carrrying trades on the turnpike roads*, now *divided* among such *a variety of companies and establishments*, must, on the opening of the London and Birmingham rail-way, *merge or fall into the hands of one great joint stock corporation*, the London and Birmingham rail-way company.*

The second source from which the London and Birmingham rail-way company calculate to obtain their revenue, is by taking from the canal carriers, engaged in the transport of light goods by what are called fly-boats, a large amount of their trade, and by transferring the same to the rail-way company in their capacity of carriers.

How far this last calculation may prove correct, seems to be extremely doubtful, for the canal conveyance to London is already far cheaper than that on rail-ways, and the Liverpool and Manchester rail-way company, in their competition with the water carriage, have obtained but a very trifling proportion of traffic from the canals. The *profits* (*if any have actually been made by the carriage of goods on the Liverpool and Manchester rail-way*) *are extremely small;* yet the *water* distance between Manchaster and Liverpool, is nearly double the *rail-way* distance; and instead of possessing the regularity of canal conveyance, is, for eighteen miles of this additional length, subject to the winds and tides of the Mersey. Nevertheless, of an amount of nearly fourteen hundred thousand tons annually, for the carriage of which the directors of the Liverpool rail-way were desirous to provide, before the rail-way was opened, little more than an eighteenth part, including the entire road traffic, has been as yet, obtained for the rail-way; and the *expenses of carrying this fraction of the trade, have been so enormous*, as to make it doubtful whether the rail-way company do not suffer *a regular loss on their carrying trade*, which is defrayed from *their profits as coachmasters.**

The question is one of great importance to the parties interested in the canals between London and Birmingham, as on the truth or falsity of the calculations of the promoters of the rail-way, must depend the continuance of a considerable portion of the revenue of the canal proprietors, and the very existence of the trade or occupation of the canal fly-boat carriers. Unless the London and Birmingham rail-way company obtain

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* I know the turnpike road coachmasters say they are able to carry nearly as cheap as the rail-way, but though they could, the enormous capital, and the credit and the power to borrow or create stock, which the rail-way corporation possess, must make rivalry with them ruinous, if not impossible. By the statement of Mr. Booth, the secretary to the Liverpool and Manchester rail-way, it appears that the expenditure in the formation of the rail-way works, *or as it is termed, the capital account*, on the 31st May, 1830, was £739,165 5s. 0d. and at this time the rail-way was nearly completed, and was opened four months after for general trade. This expenditure of £700,000, occupied a period of four years. By the account appended to the "Summary of evidence of the London and Birmingham rail-way," it appears that the expenditure on account of the Liverpool and Manchester rail-way and works, amounted, on the 31st December, 1831, to a sum of nearly £992,054. 3s. 6d. so that the expenditure on the capital account, from 31st May, 1830, to 31st December, 1831, amounted to £252,888 18s. 6d. The expenditure on the *capital account* has heretofore continued as high, *after the rail-way was opened*, as during the *period it was constructing.* In addition, an act has been obtained this year, authorising the company to borrow £100,000 additional, to make a tunnel for the coaching trade. A company thus incorporated may at once ruin a rival, by increasing their stock without touching their dividend.

* The entire trade contemplated by the directors, previous to the rail-way being opened, and for which they wished to provide means of conveyance between Liverpool and Manchester, was 1,248,000 tons; but the entire amount obtained in the year 1831, was 88,099 tons, of which 52,224 tons was carried in the last six months of 1831. The expense of carriage of these 52,224 tons, was £21,841 4s. 10d. so that if the entire amount of anticipated trade on the rail-way had been obtained, the actual *annual outlay on the goods trade alone*, would have amounted to nearly £500,000 sterling, besides all the coaching disbursements, a sum far beyond the original estimated cost of the rail-way itself.

possession, not only of the *whole revenue or tolls paid to the trustees on the turnpike roads*, with a *portion of the canal tolls*, and the *entire income and profit of the carriers and coachmasters* on these roads and canals, no return whatever could be obtained from their outlaid capital.

The rail-way company take it for granted that the canals are unable to enter into competition with them for the turnpike road traffic, the coaching, posting, van and waggon trade of which they expect to take from the road without dispute. They consider that the canal companies must stand merely on the defensive, until the rail-way company, *having taken the road trade*, begin the attack, and that then the canal carriers and companies can only protect and preserve a part of their light goods' trade by a reduction of dues and charges, to compensate for the great rates of speed of the rail-way conveyance.

It is in order to enable you to change entirely this position of parties that I now address you, and I expect to make it clearly evident, that instead of being obliged to defend their present trade, the canal companies and canal carriers may not only possess themselves of the whole van and waggon carrying trade now plying along the turnpike roads, but may obtain also a large portion of the *coaching or passenger trade*, and thus *meet the rail-way* on what was expected to be *their undoubted and indisputable possession*.

I am aware that at the present you believe it to be impossible, that in case a canal of nearly the same length as the Liverpool and Manchester rail-way, could by any means be formed, connecting these towns, that it could take from the existing rail-way any considerable portion of the passenger trade, and it is likely that any statement in opposition to this belief, will generally be received with ridicule. The fact, however, is, that *supposing such a canal to be formed and in operation, between Manchester and Liverpool, the rail-way coaching trade could not stand for a single month in competition with canal passage-boats;* and this is the case, and will be the case, in every canal where the proper means are adopted. For however incredible it may appear, it is certain that canal passengers can be carried at a speed of ten miles an hour, with *a degree of ease, comfort, and safety*, such as *no other conveyance can give*, and at a charge (if required by competition) not much *more than a tenth of the cost of the rail-way travelling*.

These facts, so different from general belief, have only been completely ascertained during the course of the last two years. They are consequent on the detection, by *practice* or *experience*, of *two fallacies* which had been held out to the public, and received as undoubted truths.

The *first* of these fallacies was, that it was impossible to propel a boat, carrying any considerable number of passengers, along a canal at a high speed, without incurring an enormous expenditure of money and power, and without occasioning a wave or surge which would wash down the canal banks.*

The *second* fallacy was promulgated by certain engineers connected with rail-way projects, and is as follows, viz. that in proportion as the *speed on the rail-way was increased*, the expense of conveyance *was diminished*, as the engines by doubling their speed could in the same time do double work.*

Now the first fallacy, viz. the alleged impossibility of moving at a great velocity through canals, and the certainty of the destruction of the canal banks by the swift passage of canal vessels, have been proved to exist in imagination only. A speed of ten miles an hour has for the last two years been maintained, in the carriage of passengers on one of the narrowest canals in Britain, *without raising a ripple on the banks*, even where the vessel carried upwards of one hundred passengers, *or as many as are carried in a train of coaches on the Liverpool and Manchester rail-way*.

The *expense or cost* of obtaining *this speed*, are so trifling, that the *fares per mile are in these quick boats* just *one-half* and *one-third* of the *fares in the Liverpool rail-way coaches*, while at these low fares the profits are such as to have induced the boat proprietors *to quadruple the number of boats on the canal*.

On the other hand, and in respect of the *second fallacy*, although it be true that the extraordinary velocities obtained on the Liverpool rail-way have fully come up to the expectations of the projectors, yet the *expense*, instead of *being diminished* (according to the dicta promulgated by the engineers) have been *enormously increased*, and have gone so far beyond all previous calculation, as to make it doubtful whether the rail-way company will not ultimately find, that, agreeable to an Irish phrase, they have gained a loss.

It is sufficient here to say, that while the rail-way was forming, and before it was opened, the entire expenses of a locomotive engine working 312 days in the year, and doing three trips of thirty miles per day were stated, and indeed appeared to have been *demonstrated to be* £270 12s. 10d. or including a sum of £54 proposed to be laid aside every year for interest on capital invested, and replacement of engines employed, with allowance for spare engines, *a sum of* £324 12s. 10d. sterling; yet between *errors in the calculation, and the effects of the quick speed, the bare cost of the above journies has been increased to nearly* £2200 *a year*, and this large sum is the *mere charge* for *fuel, repairs, and enginemen's wages*, without any allowance for *interest* on *capital* expended on the engines, or for their replacement.*

After making these statements so contrary to general belief, it is proper that I should proceed to show distinctly the truth of what I have stated.

Two years have not yet elapsed since the opening of the Liverpool and Manchester rail-way, *where the first*

* The last scientific work I am aware of, in which these fallacies, propositions, or data, are demonstrated to be true, is Mr. Wood of Killingsworth's book on rail-ways. This book was republished about six months after the Liverpool rail-way was opened; and it is there demonstrated that it would take upwards *of seventy horses to do on a canal* what *is now actually done every day on the Paisley canal, by two horses;* while it is in like manner demonstrated that the conveyance on the Liverpool rail-way was costing *one-ninth of the amount, which, at the end of the year, it was found to have done.*

*Previous to the opening of the Liverpool rail-way, Messrs. Stephenson and Lock, engineers on the rail-way, judging from various trials and experiments made on the rail-way, calculated the expense of an engine doing nine hundred and thirty-six trips yearly or three trips per day, at the rate of fifteen miles per hour, dragging a dead weight of about thirty tons, as £324 12s. 10d. including a sum of £54, laid aside each year for replacement of engine and interest on cost;—or the cost of the motive power of each trip was calculated by them at a sum something under six shillings and sixpence.

It does not appear by the Liverpool and Manchester rail-way reports, what number of engines they had in employment during the year 1831, but this is of little importance, as the number of thirty mile trips performed by these engines is specially stated, with the cost of these trips, and this cost includes *merely the price of coke consumed, the cost of repairs, and enginemen's wages, without any allowance whatever for interest of capital or replacement of the machines themselves.* Now, the exact number of thirty mile trips made by the Liverpool rail-way engines in the last six months of the year 1831, was 5,392, of which 2,944 were with coaches and passengers, the gross weight dragged not exceeding fourteen tons. The expense or cost of these 5,392 trips, for coke, wages, and repairs alone (allowing nothing for replacement) was £12,203 5s. 6d. or a little above £2 5s. 3d. per trip; or the bare cost of an engine doing nine hundred and thirty six trips was £2,107 14s. instead of £270 12s. 10d.

experiments were made as to the effect of *high velocity on rail-way conveyance*. At this very period, certain experimental boats were built for the purpose, and in the expectation of obtaining *an increased speed in the conveyance of passengers on the Ardrossan*, or as it is more generally called, *the Paisley canal*. These two experiments, as regards high velocities on rail-ways and canals, were therefore begun and continued during the same period. The actual result of these experiments I shall now state.

As respects canals, the experiments of great velocity have been tried and proved *on the narrowest, shallowest, and most curved canal in Scotland*, viz. the Ardrossan or Paisley canal, connecting the city of Glasgow, with the town of Paisley and the village of Johnstone, a distance of twelve miles. The result has disproved every previous theory as to the difficulty and expense of attaining great velocities on canals; and as to the danger or damage to the banks of canals by great velocity in moving vessels along them.

The *ordinary speed* for the conveyance of passengers on the Ardrossan canal, has for nearly two years been *from nine to ten miles an hour*, and *although there are fourteen journies along the canal per day, at this rapid speed, the banks of the canal have sustained no injury, indeed injury is impossible, as there is no surge*. The boats are formed seventy feet in length, about five feet six inches broad, and, but for the extreme narrowness of the canal might be made broader, they carry easily from seventy to eighty passengers, and when required, can, and have carried upwards of 110 passengers. The entire cost of a boat and fittings up, is about £125. The hulls are formed of light iron plates and ribs, and the covering is of wood and light oiled cloth. They are more airy, light and comfortable than any coach, they permit the passengers to move about from the outer to the inner cabin, and the fares per mile are *one penny* in the *first*, and *three farthings in the second cabin*. The *passengers are all carried under cover*, having the privilege also of an uncovered space. These boats are drawn by two horses (the prices of which may be from 50 to £60 per pair) in stages of four miles in length, which are done in from twenty-two to twenty-five minutes, including stoppages to let out and take in passengers, each set of horses doing three or four stages alternately each day. In fact, the boats are drawn through this narrow and shallow canal, at a velocity which many celebrated engineers *had demonstrated, and which the public believed to be impossible*.*

The entire amount of the whole expenses of attendants and horses, and of running one of these boats four trips of twelve miles each, (the length of the canal,) or forty-eight miles daily, including interest on the capital, and twenty per cent. laid aside annually for the replacement of the boats, or loss on the capital therein invested, and a considerable sum laid aside for accidents and replacement of the horses, is £700 some odd shillings, or taking the number of working days to be 312 annually, something under £2 4s. 3d. per day, or about 11 pence per mile. The actual cost of carrying from eighty to one hundred persons a distance of thirty miles (the length of the Liverpool rail-way) at a velocity of nearly ten miles an hour, on the Paisley canal, one of the most curved, narrow, and shallow canals in Britain, is therefore just £1 7s. 6d. sterling. Such are the facts, and incredible as they may appear, they are facts which no one who inquires, can possibly doubt.*

As respects *rail-ways*, the *experiment of high velocities* has been made, and *the result ascertained* on the *best finished*, and *finest line of rail-way in Britain*, connecting the two great towns of Liverpool and Manchester, without a single curve from end to end, and with only two short ascents.

The result of this experiment on the Liverpool rail-way has been *somewhat different from that on the Ardrossan canal*. On the railway, indeed, the expected velocity has been fully attained, and the calculations of the engineer, in this respect, satisfactorily demonstrated *as possible and correct;* but unluckily one very important matter had not been *admitted into the calculation*, or rather *had not been supposed to exist*, viz:—the probability, or rather certainty, of a great *increase of expense*, consequent on *increased speed*. The *geometrical ratio* of increased resistance on increasing the speed on canals, has been transferred to the *increase of expense* on *increasing the speed on rail-ways*, with this addition, that the increase of expense affects not merely the moving power, or locomotive engine, but the coaches, waggons, and road-way. The ordinary speed of conveyance on the Liverpool rail-way, is from ten to twenty miles an hour, and depends much on the weather and the weight dragged. The rail-way engine with its tender for carrying coke and water costs about £1000, and drags after it a train of eight coaches, the cost of each of which, if the same as in the estimate for the London and Birmingham rail-way, should be £200, or a train of first-class coaches, with accompanying engine and tender, cost £2600. The coaches accommodate one hundred and twenty passengers. There are other coaches, and also uncovered waggons, which travel at an inferior speed, and which will cost less. The fares are various; seven shillings, or nearly three pence per mile for each passenger, in the best coaches, and five shillings, or two pence per mile, for each passenger in the common coaches, of what is called the "first train," being just *double* and *treble* the *Paisley boat fare;* and four shillings in the coaches, and three shillings and six pence in the uncovered waggons of what is called the "second train," which move at a lower velocity. The *lowest rail-way fare to the traveller*, is therefore *three halfpence per mile*, in an *open, uncovered waggon*, moving at *an inferior speed*, exposed to *wind and rain*, and the *steam and smoke of the engine*—or *double the fare on the Paisley canal*, for being carried *in a comfortable cabin under cover*.

The exact cost of running the Railway Coaches cannot well be made out, as the expenditure is so blended

* The Paisley canal passage boats are formed very much like the common race gig. This form was suggested by William Huston, Esq. of Johnstone, who made an experiment with a common race gig boat, in spring, 1830. He found that with a single horse, this boat with twelve men on board, could be drawn through the Paisley canal at the rate of twelve miles per hour. The first boat for passengers, built in consequence of this experiment, was made of wood, and the only difficulty in her management, was the labour to the horses in carrying her round the curves in the canal. This difficulty, at Mr. Huston's suggestion, was removed by doing away with the dead wood behind, and attaching a deep midships keel. By this alteration, the boats steer most beautifully, and the labour of the horses at the curves is made quite easy. The hulls of all the boats since the first, have been made of iron, the plates of a 16th wire gauge. This makes them very light, and much stronger than a wooden boat, and two years trial has shown their perfect safety, in spite of all the doubts and objections started, when I first proposed their use. The plans of the boats were made out by Mr. John Wood, ship-builder, Port Glasgow. Description, however, will not do; let parties wishing information as to these boats, come and see their performance.

* Cost of Coaches.—In the Liverpool rail-way account of expenditure, for the last six months of 1831, the charges for repairs and attendance on the Liverpool rail-way coaches, is stated at £7,455 1s. 1d. sterling, of which 3d. ⅛ per passenger, or £3,254 0s. 0d. ⅜, *is stated as being paid for Omnibus accommodation*. This leaves £4,201 1s. 0d. ⅝ sterling, as the cost of repairs, and attendance, and the number of thirty mile trips, being, per the Report, 2,944, the cost on each trip was £1 8s. 7½d. sterling.

in the Railway accounts with other matters, that is difficult to separate the appropriate items. *The bare cost of fuel, repairs, and enginemen's wages, however, on each thirty mile trip of a locomotive engine, amounts* as appears by the Liverpool and Manchester Railway accounts, *to a sum of* £2. 5s. 3d.* while the *cost of repairs and attendance alone on each train of coaches going a thirty mile trip is* £1. 8s. 7½d.† Or the *outlay* on these two items of expenditure *alone costs 2s. 5½d. per mile*, or nearly *triple the entire cost of running a Paisley Canal boat a like distance.* If the other items of expenditure are added, it will be found that the *mere outlays per mile on the running of the Liverpool Railway coaches* are not *much inferior*, if they be inferior at all, *to the gross amount of the fares* receivable from a passage-boat on the Paisley Canal, supposing it always to have (what is not possible) a full complement of passengers.

The above conclusion is fully established by the Liverpool and Manchester Railway Report before-mentioned. By this Report it appears, that the average gross receipt from each passenger going along the Liverpool and Manchester Railway in the last six months of 1831, was four shillings and sixpence halfpenny, and that two shillings and one farthing of this sum was cost or outlay in the articles of coke, wages, repairs, and cost of keeping up the Railway and establishment, but without any allowance for replacement of engines and coaches, or for returns on the capital invested therein, or for Railway dues. It is stated in the accounts that 3d.⅛ of this outlay is paid for the use of Omnibuses to each passenger, *which, if correct,* makes the cost of carrying each passenger thirty miles to be one shilling and ninepence ⅛, or as nearly as possible, *three farthings per mile*, which *is just the full fare levied from five-sixths of the passengers on the Paisley Canal.* In other words, the Paisley Canal Company make a *large profit on fares* which would not pay the *mere outlays on the Railway conveyance.*

The Paisley Canal-boats have now been at work plying on that Canal, since the autumn of 1830, and it is found that they are as easily and as safely drawn at the high velocities before mentioned, during the night as during the day. The accidents on the Liverpool railway have been so frequent, and so serious, as to require the notice of the Directors in the reports; whilst not even the semblance of an accident has happened with the Paisley boats. When plying in the dark, the only precaution necessary is on account of the boy riding and directing the horses. In passing under the bridges over the canal, a light to direct him is opened by the man at the bow of the boat, and thrown on the bridge so as to guide the boy, and this light is shut up as soon as the bridge is passed.

The accommodation to intermediate passengers by these boats is very great; they are so light and so easily drawn, that they have (what is termed) little way, and stop almost as soon as the horses cease to pull, while, from the lightness and shallow draught of water of the boats, the velocity can be easily and suddenly regained.

If the trains of coaches on the Liverpool rail-way were like the Paisley canal boats, stopped every mile or two for the accommodation of intermediate passengers, they would not be able, from the time lost in first reducing and afterwards raising their speed, to go so fast as these improved canal-boats.

This easy power of stoppage, and of travelling during the night, is, independent of cheapness, a most formidable power to canals in obtaining the carriage of p- | sengers, and if properly employed, will more than put them on a par with rail-ways in the competition for the passenger trade. Intermediate passengers on most routes give nearly one half of the returns; and it is impossible for a rail-way to accommodate this intermediate trade without sacrificing its only advantage of superior speed.

The passage of locks in canals, and the delay consequent on such passage will, no doubt, be an obstruction and disadvantage to many canals; but by proper arrangements, this disadvantage may be got over. The locks, where it answers, may be the places at which horses are changed, or for receiving or landing passengers. And where they occur in the middle of a stage, they will be a short relief to the horses, so that a higher speed may be kept up before and after leaving the locks. Where a series of locks occur at one place, the time occupied may be employed in obtaining refreshment, or taking breakfast or dinner. There are no locks on the Ardrossan or Paisley canal, but in two of the stages it is for a considerable distance so narrow, that two boats cannot pass. At these places (when the boat is fully loaded) the speed is slackened to between four and five miles an hour; the time is afterwards made up on the wider parts of the canal. The entire length of these narrow places extends to fully a twelfth of the whole length of the canal.

Such are the improvements which have been effected on the Ardrossan or Paisley canal, so far as regards high velocity; and they may be followed out in every canal so as not merely to defend the present established canal revenue, but to obtain a new and great additional revenue.*

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* State of time occupied on two voyages from Johnstone to Glasgow, 12 miles, June, 1832:—

FIRST VOYAGE.

1832.

June 16.—Left Johnstone 28 minutes from 3 o'clock, P. M. met no boats—diminished speed to about 4 miles an hour in narrows, for about half a mile from Paisley—arrived at Paisley 5 minutes to 3—

		HOUR.	MIN.
Time		0	23
Stopt at principal basin, Paisley	0 8		
At coal wharf beyond	0 3		
		0	11
Arrived at Glasgow a few seconds from 4—met 5 loaded boats and a passage boat between Paisley and Glasgow, lost upwards of a minute and a half at aqueduct over river Cart, which a boat entered before us, and where the canal is too narrow for two boats to pass. Stopt once to change horses, and then to let out or take in passenger—time.....		0	54
		1	28

	HOUR.	MIN.
Time on journey, including stops, except at Paisley, 1 17		
At Paisley, 0 11		
	1	28

SECOND VOYAGE.

1832.

June 28.—Left Johnstone 29 minutes past 2 o'clock, P. M. arrived at Paisley 7 minutes to 3—no stops except for half a mile at entering Paisley, where, as usual, boat was slowed 0 24

Stopt at principal basin,	0 9		
At coal basin,	0 3		
		0	12
Arrived at Glasgow at four minutes from 4, P. M.—met three loaded boats and passage boat—stopt twice for letting in and out passengers, and once to change horses,		0	51
		1	27

Time on journey, including stops, except at Paisley	1 15		
At Paisley,	0 12		
		1	27

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*See note on page 242, second column.
†See note on page 243, second column.

Although I have principally confined myself to the article of passengers, yet all I have stated applies equally to the light goods now sent by the road waggons and vans.

With two horses it has been shown, that a weight equal to nearly eight tons in passengers, may be conveyed along a narrow and shallow canal, at a rate of nine or ten miles an hour, and at an expense of 11d. per mile, including every outlay, with interest and replacement of capital, being less than one-third of the bare cost for conveyance of a similar weight on a rail-way.*

To enter into any further details as to the superior cheapness of the conveyance of light goods by the new improved boats on canals, over the conveyance by rail-ways, is unnecessary. For if in the passenger trade (in which branch of conveyance rail-ways were considered to be invincible,) the improved boats possess such advantages over rail-ways; it is clear, that these advantages in the carriage of light goods, are still more decisive. The absolute outlay or cost of conveyance of a ton of goods, between Liverpool and Manchester (by the rail-way accounts,) is upwards of 8s. or between 3d. and 4d. per mile, without any allowance for the annual deterioration of the vast sum laid out in waggons, engines, machinery, &c. for enabling the rail-way company to prosecute the carrying trade, and without any allowance of interest on that capital, or on the sum laid out on the rail-way.

But these goods could be carried along a canal at nearly the same speed, and for a cost of about one penny farthing per ton per mile, including in this sum a liberal allowance for interest and replacement of capital; thus leaving a sum of from two pence per mile to three pence per mile to meet the expenses of delivery, canal dues, and carriers' profits—while the entire charge would be still within the outlaid expenses on a rail-way.

I know well that the amount of articles requiring a dispatch of eight or ten miles an hour, or rather which can afford to pay any additional charge for conveyance at this speed, is very trifling; but if the statements in the summary of evidence as to the London and Birmingham rail-way be correct, there is at present a considerable traffic in light goods by vans and waggons on the turnpike roads in the line of your canals. If so, you must not permit a rival to possess himself of this trade, and to use the revenue of it as a mean to keep up the rival establishment. By conjoining in boats on the improved construction, the carriage of the light goods now going by vans or waggons, and coaches, with a night passenger trade, a very lucrative branch of busineas may be reared up for your navigations. With light boats, carrying from thirty to forty passengers, and from four and five tons of goods, all the turnpike, van, and carrying trades, may be taken by the canals, and all travellers to whom money and time are of moment, will prefer this night route. The ease of motion of the boats is such, as to prevent all fatigue, and by a limitation in the number of passengers, the accommodation may be made as comfortable as a bed or sofa.

Every one who has seen the various improvements introduced, and introducing into the construction of the light gig-shaped boats, must be sensible that this matter is in its infancy. The comfort and airiness of the later made boats is most striking; and the introduction of a hollow keel will enable them to be made much flatter midships, so as to make them more easily tracked. That farther improvements may be introduced, I make no doubt, and when it is considered that the entire improvements already stated, *have originated with, and have been brought into full effect by one individual* (William Houston, Esquire, of Johnstone Castle,) who was previously unacquainted entirely with boats or boat building, the field of improvement seems sufficiently open. To his talents and perseverance, Canal Companies and Canal Carriers are deeply indebted; and I am convinced nothing would afford him greater pleasure than to see his improvements carried forward and surpassed.

I shall make only one farther reference to the Liverpool and Manchester rail-way report, and state, that it thereby appears, that such is the value set on money as compared to time, *that a large proportion of the passengers on that rail-way prefer to travel by the open uncovered waggons at a greatly reduced speed, and without the accommodation of an Omnibus at each extremity to convey them to their destination, in order to save one shilling and sixpence.* In other words, *the saving of two hours of time, and a walk of nearly three miles, was not worth to them an outlay of eighteen pence.* The same result must take place in the contest between your passage boats and the rail-way carriages, with this difference in your favour, that the second cabin of one of the boats at a *fare of three farthings per mile, will be more agreeable and much safer,* than a *rail-way coach of the first order,* at a *fare of three pence per mile.* In all night travelling, provided the vehicle is noiseless and easy in motion, time is not taken into account in distances which can be accomplished between eight or nine at night, and seven or eight in the morning. The rail-way coaches cannot travel at night, and if they could, their only advantage of speed would be lost between the principal points of the journey.

I need not call your attention to the improvements by lengthening locks, improving curves, avoiding circuits, &c. which you may make on the passage along your canals. *If the breadth and the curves in the Paisley canal permitted their boats to be made ninety feet instead of seventy feet in length, the passage boats would carry nearly a half more passengers without increase of expense, while the labour of the horses would be diminished.**

Many of these improvements must depend for execution, on the consent of the adjacent landed proprietors, and which it would be clearly their interest to grant. The improved communication is a general benefit to the country, *and a very particular one to those districts to which the improved water conveyance may be extended, and particularly beneficial to the agricultural and working classes,* by affording *employment to the one,* and a *market for the produce of the other class.*

The merits of the improved conveyance are not like all *late improvements, a mean of superseding animal labour or power,* but consist in an *improved and extended application of that power.* The country obtains thereby all the benefits of the cheaper and improved travelling and communication, while the change is productive of not *even a temporary inconvenience* to the *raisers of food,* or to *the labouring classes who consume it.* It does not consist in the *substitution of a small number of machines* to *supersede the work of many thousands of men and horses,* but the *improvement consists in enabling these men and horses to exceed and supersede the power of machines.*

I am respectfully,
Your most obedt. servant,
THOS. GRAHAME.

Glasgow, July, 1832.

—The stop at Paisley is stated separately, as it would be on any other journey useless. Paisley furnishes almost all the passengers both for and from Glasgow and Johnstown.

*See note on page 244, second column.

* The builders of the Paisley boats have just finished and launched a passage boat on the same principle in the Monkland canal. She is eighty-four feet long, six feet three inches broad, and can with perfect ease carry upwards of 100 passengers. She was built in Paisley, by Messrs. Reid and Hannah, carried on a truck to Johnstone, where she was fitted up by Mr. Boag, and thence carried on a truck fully sixteen miles, and launched in the Monkland Canal, where she gives the highest satisfaction.

With great submission to the learned men who have experimented and written on the subject of the resistance to bodies moving at various velocities on the surface of water, it would appear, that *little certain knowledge* has yet *been attained in the matter.* Independent of the *simple resistance of the water*, to its being divided or thrown aside by the moving body, which might (if it could be preserved unmixed with other causes of resistance) be measured and ascertained, there are causes of obstruction or resistance excited or brought into action, by the mere motion of the advancing body, which are constantly varying in amount and effect, and which thus render all experiments as to the actual resistance of the water, *and its increase*, quite uncertain. The variations in these sources of resistance are so great, that while at certain velocities (very high or very low velocities) they hardly appear to exist or to produce any effect—at certain other velocities they would appear to be greater obstructions than the *actual resistance of water* to being cut or divided. If these subsidiary causes ever totally disappear, it is at very high velocities, and I am inclined to think, that at these velocities they do disappear—but this disappearance is uncertain; it is well ascertained, however, that though not very perceptible, they may be observed at very low velocities.*

My meaning will be best explained by a reference to facts verified by the Paisley Canal Passage Boats, when moving along that Canal. When started at a low velocity, these boats move apparently through the smooth surface of the Canal, meeting with no resistance other than that of a very small part of the fluid which they intersect. If, in addition to this resistance they are burdened with the obstruction of a small body of water carried on before, it is not perceptible. Let the speed be increased, and a body of water rises in front of the boat, preceding it at various distances, dependent on the velocity of the boat, and increasing by degrees, till it rises to eighteen inches, and two feet flowing over the banks of the Canal, and occasioning such a resistance, that the horses dragging the boat would, if it was allowed to continue, be unable to proceed for any length. If, however, the speed is farther increased, the boat advances to, and passes the wave, which subsides behind, and the water in the canal becomes again perfectly still. The horses become then fully able for their work, and the boat appears to meet little resistance other than that occasioned by cutting or passing through the water. Whether in this last case the vessel still continues to carry a body of water in front, is uncertain, but if such be the case, it is imperceptible, and the higher the velocity, it would appear, from the increasing quiescence of the water, the more is the resistance to the moving body reduced to the mere resistance offered to the cutting of the water. So sensible are the masters of the Paisley Canal Passage Boats of the destructive effect of this wave before the boat, and in obstructing its motion and overcoming the power of the horses, that when by the carelessness of the drivers a wave is allowed to rise, the boats are stopt and again started, as it is found to be much easier to bring the boat up to the high from the low speed, without raising the wave, than to force the boat over the wave when once it has been raised. In like manner when the boat is moving at the rate of nine or ten miles an hour through the Canal, if the horses are suddenly stopt, the wave appears as the speed decreases, and washes over the banks until the onward motion of the boat falls to the low velocities first mentioned.

Now, two very opposite conclusions might be drawn by persons observing these facts. One person beginning with the high velocity, and observing the increase of labour to the horses on decreasing that velocity, might be apt to imagine, that not only the resistance increased with the diminished speed, but that at the diminished speed, a wave, destructive to the Canal banks, was raised. Another party again observing the increased resistance and wave consequent on increasing the speed of the boat beyond the low velocity, might at once lay down opposite rules and conclusions.

Until some mode of measuring the effect of this wave in increasing the resistance is ascertained, it would appear to be difficult to say what is the real increase of resistance in passing along the surface of a piece of water. The fact is undoubted, that two horses on the Paisley canal boats, drag with ease a passage boat, with her complement of seventy-five or ninety passengers, at the rate of ten miles an hour, along the canal, while it would kill them, or even double the number of horses, if they attempted to drag that boat along the canal at the rate of six miles an hour. It would be much easier to draw the boat along the canal at the rate of fifteen miles an hour, than at the lower velocity of six miles. The facts now stated, though more decidedly exhibited in the Paisley canal, from its narrowness, have been proved and exhibited on various other Canals, and must, though in different degrees, affect motion along all bodies of water.

They afford great encouragement to canal companies, in their endeavours to improve the speed on their canals. I have been dragged, by one horse, in a common gig boat, with five or six other persons, for two miles, along a canal, at the rate of fifteen miles per hour; and this speed was not limited *by the labour* of the draught, but by the *power of speed* of the horse. A high degree of speed is safer both for the light boat and the canal works, than a speed of five miles an hour with a common heavy boat, as the light boat carries little way, or momentum, and might be dragged at the above high velocity to the very entry of a Lock, and would have her speed reduced before she was fully into it, so that there is no danger to the gates.

I have also performed a voyage of 56 miles, along two canals, including the descent of four, and the ascent of eleven Locks, the passage of eighteen draw-bridges where the line was thrown off, and sixty common bridges, and a tunnel half a mile long, in six hours, thirty-eight minutes. The boat was of a twin shape, 69 feet long and 9 feet broad, and was drawn in stages by two horses each stage, and carried thirty three passengers, with their luggage and attendants. T. G.

July 1832, *Glasgow.*

* The approach of a slow coal boat is perceptible in a Canal a mile and upwards before it comes forward.

APPRENTICES LIBRARY COMPANY.

Annual Report to the Apprentices Library Company. March 11, 1833.

List of Officers and Managers.

President—JOHN SERGEANT.
Vice President—ROBERTS VAUX.
Secretary—ANTHONY FINLEY.
Treasurer—SAMUEL SELLERS.

Board of Managers.

Philip Garrett,	John Bouvier,
Henry Troth,	Alexander Towar,
Benjamin Tucker,	Townsend Sharpless,
Joseph H. Smith,	James J. Barclay,
Isaac Barton,	Job R. Tyson,
Samuel Mason, Jr.	George Handy,
Joseph M. Truman,	Thomas Savery,
Isaac Lloyd, Jr.	John Cooper,
Marmaduke C. Cope,	Henry Farnum,
John G. Hoskins,	Isaac Hazlehurst,
Thomas Ridgway,	J. H. Willetts,
Frederic Fraley,	Joseph Cresson.

To the Apprentices Library Company.

The Board of Managers, in the fulfilment of their official duty, respectfully Report:

That during the past year nine hundred and forty-four volumes have been added to the Library, (of which number two hundred were selected from donations, and seven hundred and forty-four obtained by purchase) and four hundred and twenty-six volumes have been re-bound. The collection now consists of about eight thousand volumes, chosen with a conscientious regard to the best interests of those who use them, and embraces works in almost every department of science, literature, and useful arts. Within the same period thirty-three members have been added to the company, and seven hundred and fifty-four new applicants admitted to the privileges of the institution. The number now participating in its benefits is nine hundred and thirty-one, and about six thousand individuals are estimated to have enjoyed its advantages since its establishment. $335 68 have been expended for the purchase and re-binding of books, and $651 83 in defraying other incidental charges of the establishment. The deportment of the boys has generally been orderly, and the same zeal to acquire useful knowledge, which has been witnessed by our predecessors, still prevails amongst them. The unsettled claim of the company to a portion of the real estate of the late John Grandon, has been confided to a special committee, and measures are in progress to place the testimony relating to it on record.

The additional facilities of access resulting from the more frequent opening of the library, are believed to have secured the benefits expected from them, and obviate the interruptions which necessarily occurred, in the delivery of books by the throng of applicants.

Immediately after the organization of the Board, it was deemed advisable to call the attention of our fellow citizens to the institution in a more impressive manner than had been produced by means of the annual reports, and in an address delivered by John Sergeant, President of the company, its claims to public favour were eloquently sustained. From the knowledge of its character and objects, thus diffused, permanent good may be confidently expected. The establishment of the "*Apprentices Library,*" in the year 1820, for the promotion of orderly and virtuous habits, and the diffusion of the benefits of education, gave an impulse to public feeling in favour of the great work of intellectual culture, and has been followed by the founding of other institutions of a literary and scientific character, which are now actively employed in disseminating useful knowledge. These institutions are daily strengthened by the enrolment of members from that numerous class of individuals, whose first impressions of the value of study had been drawn from our interesting collection of books; and orderly and correct deportment has followed as the necessary consequence of a cultivated mind. We have thus secured the continuance of these institutions in all their usefulness, and fostered the principles of virtue received in the elementary schools. Our institution may therefore be said to occupy a middle and very important rank in the business of education; sweetening the toils of apprenticeship, by the rich repast furnished in the works of the wise and good, and removing the tendency to vicious indulgence, which idleness too frequently induces.

As the special guardians of the *Apprentices' Library*, we would continue its claim to an endowment adequate to its extensive usefulness, and hope that the munificence of the public may place it, as far as possible, beyond the reach of that decay to which all human institutions are subject.

By order of the Board of Managers.

PHILIP GARRETT, Chairman.

FREDERIC FRALEY, Secretary.

Philadelphia, Third-month, March 11th, 1833.

"The Apprentices' Library Company of Philadelphia" in account with Samuel Sellers, Treasurer. From March 12, 1832, to March 11, 1833.

DR.

To Balance,		$12
To Cash paid sundry orders of the Board of Managers, viz.		
Librarian's Salaries,		265 75
Rent,		125
Book Committee,		250
Insurance on Books,		6
Room Committee, for furniture, alterations, oil, fuel, opening rooms, and attendance,		96 05
Binding Books,		85 68
Paper for Address,	$29 34	
Printing do.,	61 89	
		91 23
Printing Cards, Labels, &c.,		41 50
Stationary,		12 00
Serving Address and Notices,		14 30
To Balance, due Company,		30 24
		$1029 75

CR.

By Cash Contributions from Members,	$617	
Deduct Com. Collecting,	46 12	
		570 88
Donations, from Joseph D. Brown,	100	
" Thomas Astley,	25	
" A Citizen,	10	
		135 00
Of Librarian for Fines, Catalogues, &c.		116 87
1 year's int'st. Ches. & Del. Canal Loan,	$108	
" Dividends, Bank N. Amer.	20	
" " Farm. and Mech. Bank,	4	
" Ground Rent,	75	
		207 00
		$1029 75

SAMUEL SELLERS, Treasurer.

Philadelphia, March 11, 1833.

Several donations have been received since the date of the Treasurer's account, which will be noticed in the next account.

Form of a devise or bequest.

I do give, devise and bequeath to the "Apprentices' Library Company of Philadelphia"—

Donations and subscriptions will be received by the Treasurer, or by any of the Managers.

The Library is open Monday, Wednesday, and Friday evenings, and on Saturday afternoon and evening.

BEAVER MEADOW RAIL-ROAD AND COAL COMPANY.

The Report of the President and Managers of the Beaver Meadow Rail-road and coal company.

This company was incorporated by law, in April 1830, authorising a capital of $250,000—with power to make a rail-road from the Beaver Meadow coal mines in Northampton county, to the Lehigh river at or above Mauch Chunk, a distance by the meanders of the stream of about twenty miles—and also, if deemed expedient, to make a rail-road from the said mines to the little Schuylkill,—at such point as might be necessary to unite with any railroad on the valley of that stream.*

*The Beaver Meadow Mines are situated on the Lausanne and Berwick turnpike, 21 miles from the latter place, near the head of a stream called Beaver Meadow Creek, which after mingling with others empties into the Lehigh on the west side about six miles above the slack water of the Lehigh Canal Navigation.

Both the routes above mentioned have been examined by an engineer: that by way of the Schuylkill is six miles from the mines to the intended termination of the Little Schuylkill rail-road at Taman End. It necessarily passes over Spring mountain, the ascent of which from the mines to the summit is feet, and the descent from thence to the point of intersection with the route of the Little Schuylkill rail-road is feet.

The whole distance by rail-road on this route to the head of navigation on the Schuylkill would be 83 miles; From thence by canal and slack water navigation 80 miles to Philadelphia.

The elevation on the route from the Beaver Meadow mine to Taman end is less than one half, and the distance about two-thirds of that between Carbondale and the Lackawaxen, which have been so successfully overcome by the Hudson and Delaware company. But the route by the Lehigh has been deemed preferable by reason of the greater facility of passing through a country, graded by streams of water, thereby avoiding the necessity for planes or stationary engines; also on account of the advantage of the market for coal on the Delaware, in New Jersey and New York; to which this route leads more directly and at less expense of transportation.

The original act of incorporation authorised this company to make a road on the Lehigh route, only to Mauch Chunk, at the head of the Lehigh canal. A failure to make a satisfactory arrangement with the Lehigh coal and Navigation company, as to the tolls, prevented the commencement of active operations during the summer of 1830, and at the following session of the general assembly, a supplement to the act of incorporation was passed, authorising an increase of the capital to $800,000 and an extension of the rail-road from Mauch Chunk to Easton, a distance by the meanders of the Lehigh of about 46 miles. This route offers a continued descent from the mines (66 miles) to Easton, where the Delaware division of the Pennsylvania canal commences and runs (60 miles, to Bristol. This canal will carry boats of 60 tons burthen.

The Morris canal of New Jersey also commences at Easton, passing through the most fertile and populous part of that state to Newark.

The Delaware and Raritan canal feeder commences 25 miles below Easton, and offers advantages for the transportation of coal either down the feeder about 22 miles to Trenton or through the main stem from Bordentown to New Brunswick and New York.

These facilities of transportation to various markets, in addition to that of Philadelphia, have indicated the Lehigh route as preferable, notwithstanding its increased distance to Philadelphia. The books for the additional capital were opened at a time when the failure of coal operations had caused a general discouragement in all enterprises of that nature, and before the comparative advantages of rail-road transportation had been ascertained by experience. A sufficient sum was nevertheless subscribed to have authorised the undertaking, but the board partook too much of the general depression to make the effort. The subscriptions were therefore generally cancelled, and the principal part of the money repaid to the subscribers: Since that time, experience has more accurately determined the expense of transporting coal by rail-roads, as well as that of constructing them, and the consequent value of coal mines in their various positions.

A new subscription was commenced in November last, and a sufficient amount subscribed to assure the board that there was no longer any apprehension of failure, or even delay for want of the necessary funds. But it was found that the time limited by law for finishing the rail-road had so far elapsed, only one year of it remaining; that it was deemed inexpedient to progress with that work until further time was obtained. Consequently application was made for a further supplement to the act of incorporation, which has been passed: allowing four additional years for completing the rail-road with the privilege of holding 800 additional acres of land. There is now no further obstacle to the success of this important undertaking, and measures are being taken for locating the rail-road as soon as the spring will permit, with every other preparation for active work.

It may be interesting to the stockholders who have never visited the Beaver Meadow mines to have some account of their character.

The mine is situated in a swamp at the west end of Beaver Meadow, and is believed to contain at least two hundred acres. The deposit of coal is in regular strata or veins separated by thin layers of slate.

An opening has been made on the north side of the mound, east of the creek, which presents a perpendicular breast of five feet of earth and rubbish on the top —an aggregate of veins of coal 27 feet, and of slate 3 feet. At the bottom of this mass a stratum of slate presents 10 feet in thickness,—beneath which the mine has been bored 21 feet below water level without encountering any slate or passing through the coal. It has therefore not been ascertained to what depth he mass of coal extends. As the hill rises, new veins of coal appear, laid one upon another like shingles on the roof of a house. The top of the mound is 70 feet above the swamp, and the mine can be drained 51 feet below the base of the mound. The slate is hard and easily separated from the coal. It is very certain that the quantity of coal is as great as the company could desire: and that the quality is equal if not superior to that of the best anthracite yet discovered. The veins are of different hardness and fracture, but all of them are free from impurities and of the best quality.

The great advantages of this mine consist in the comparative cheapness of working it; in its peculiar exemption from rubbish and slate admixture, and the excellence and purity of the whole mass of coal. Beaver Meadow coal is held in such estimation by blacksmiths that they haul it, in some instances 20 miles further than it could be had from other mines, for their smitheries, and uniformly speak of it as worth a dollar per ton at the mine more than any other coal they have worked. This fact was often stated very publicly at Harrisburg, by members of the Legislature from Northampton county, during the present session. There cannot be a reasonable doubt but that this coal will have a preference in the market sufficient to pay a fair profit, whenever other coal can be sold at cost.

The expense of transportation on a rail-road is an important consideration in this undertaking. This branch of improvement may be regarded as yet, almost in its infancy, but the experience of the last year has thrown much light on it. The expense of transportation with horse power, as stated in a letter from the intelligent president of the Little Schuylkill Rail-road company, [see appendix,] Wm. H. Keating, Esq. has been brought during the last season to 1¾ cents per ton, per mile, by contract, on a descending track including wear and tear, oil, &c. &c. He adds that "we feel sanguine of being able next year to effect our transportation at 1½ cents per ton per mile including an allowance for wear, accidents, oil, &c.: this would apply to horse power."

In the report of the Baltimore and Ohio rail-road company, whose officers are greatly distinguished for their minute accuracy—a statement of the comparative expense of horse and locomotive power is given, as the result of an experiment made with each for 30 days. That of the horse power was $33 per day, and that of the locomotive performing the same work, was $16—and one item of this last expense was $8 for one ton of anthracite. On the Beaver Meadow rail-road, the average expense of anthracite could not exceed $1 per

ton. With this deduction,the locomotive expense would be to that of the horse as 9 to 33; less than one-third. If then, coal can be transported on the Little Schuylkill rail-road for 1½ cents with horse power; according to these data, it can be done with a locomotive for less than half a cent. This result, though fairly deduced from the facts, is much lower than we have ventured to expect. Our estimates are founded upon a supposed expenditure of 1½ cents per ton per mile, for locomotive power; which must be altogether safe.

The expense of freight on the Lehigh and Delaware canals, exclusive of tolls, is now brought to one cent per ton per mile, and from Bristol to Philadelphia, 20 miles, the additional expense is 12½ cents per ton.

The estimate from these data for delivering coal from Beaver Meadow to Bristol and Philadelphia, will be as follows—

For mining,	$0 30
Freight on rail-road to Easton (66 miles) 1½ cents,	1 00
Toll on Delaware division, 60 miles,	30
Freight on do do	60
	$2 20
Add for contingencies,	30
Total expense to Bristol,	$2 50*
To Philadelphia, 12½ cts.	
Estimated contingencies do. 12½ cts.	
Total expense to Philadelphia,	$275 p. ton.

As there will be no interruption by inclined planes, it will be safe to estimate a capacity for sending to market 100,000 tons a year—this quantity will cost at Bristol $250,000, or at Philadelphia $275,000 the value of it at the former place, at $4 a ton will be $400,000, and at the latter place $4⅜ per ton will be $437,500, leaving a balance of more than $150,000 a year in favor of the company. This will be a nett gain provided the tolls from general transportation, as is believed, will defray all expenses for repairs, &c. &c.

The amount of general transportation on the Beaver Meadow rail-road can be judged of by the facilities of connection between it and the Susquehanna. An application is now pending before the Legislature for a law to authorise a rail-road from Wilkesbarre to Wright's creek on the Lehigh, a distance of 12 miles, and to extend the same if necessary, to Easton. This road may by an extension of 20 miles from Wright's creek, intersect that of the Beaver Meadow, near the mouth of Quacake creek. It is also very practicable to connect the Beaver Meadow rail-road, with the Susquehanna at Berwick, 20 miles from the mine, where there is now a a good turnpike.

Immense products of grain which descend the north branch of the river, may be purchased at Wilkesbarre and Berwick in the fall, and brought by way of the Beaver Meadow rail-road during the winter season to an excellent market at the mills of Allentown, Bethlehem and Easton.

The next consideration is, what capital will be required to put this work into complete operation? Not having an estimate of an engineer, founded on late experience, on the present price of iron, or the intended economical plan of this work, it is not competent for the board to speak with satisfactory certainty on this point. Their intention is at present to construct a cheap road with a single track and turn outs, laid with wooden sills and string pieces covered with an iron rail.

The grading will be chiefly on hill sides composed of loose rock and gravel, gradually descending along the water courses, and therefore not subject to expensive deep cuts or embankments.

From the general appearance of the route, it offers remarkable advantages for a cheap and expeditious work: two or three miles at most, threaten unusual expense. There can be little doubt that such a road made through such a country where timber is cheap, and the inhabitants are altogether favorably disposed, may be made for from $6000 to 8000 a mile. It was optional with the company to receive subscriptions for the whole capital authorised by law, or for such amount as might be thought necessary to complete their work. The latter is deemed to be the most advantageous plan, and with this view the subscription for stock has been limited to 9000 shares. It is the intention of the board, should more money become necessary, either to borrow the sum required, or dispose of additional stock for the benefit of the company, or enlarge the capital by allowing the stockholders for the time being, the opportunity of increasing their respective subscriptions, pro rata.

It is confidently believed, however, that no additional stock will ever be required—and that an inconsiderable loan will meet any contingency which can happen.

There are other aspects of this undertaking, which well deserve to be presented to the notice of the stockholders.

An act of assembly has been passed to incorporate a company to make a rail-road from Norristown to Allentown (30 miles.) The extension of the Beaver Meadow rail-road to the latter place (28 miles from Mauch Chunk,) could scarcely fail to stimulate by the offer of extensive transportation, sufficient enterprise to accomplish that work.

This done, and the Philadelphia and Norristown rail-road completed, there would be a direct and quick communication, with extraordinary facilities for transportation and travelling between Philadelphia and the adjacent region extending to the north branch of the Susquehanna. Under every circumstance, there rail-roads would engross all the business of the winter, and have a preference for a considerable proportion of it throughout the year, even if freighting can be done cheaper on canals, of which, however, there is yet no evidence that can be relied on. Upon this route, coal could be sent to market from the Beaver Meadow during the winter; in addition to the summer business done by way of the canals.

The plan of operation which remains to be considered, ought perhaps to have been first presented to the stockholders. A rail-road of 20 miles from the Beaver Meadow mine reaches the head of the Lehigh canal, which is capacious and well supplied with water at all seasons. The tolls charged upon this canal by the Lehigh Coal and Navigation company, of $1 03 per ton for 46 miles, were so high that the Beaver Meadow company have sought relief by the extension of their rail-road to Easton. Should the Lehigh company, however, think proper to change their policy in this respect, and agree to a permanent reduction of their toll to reasonable rates; there is no feeling of rivalship indulged by this board towards that company, which would desire to deprive them of the benefit of the tolls on the Beaver Meadow coal; even though the profits arising from those tolls must tend to lessen their expenses, and sustain the coal of Mauch Chunk in more successful competition.

This company will of course, consult the interest of the stockholders alone, in any measure which may be proposed on that subject.

At the rates of toll now charged by the Lehigh com-

* It is ascertained that coal may be transported from Bristol by sea to New York, for one dollar per ton.

pany, it will cost the Beaver Meadow company to send their coal through the canal to Bristol, as follows—

Mining,	$0 30
Rail-road to Mauch Chunk, 20 miles,	30
Toll on Lehigh,	1 03
Do. on Delaware division,	30
Freight from Mauch Chunk to Bristol, 170 miles,	1 07
	$3 00
Add for contingencies,	30
	$3 30

If the rail-road should terminate at Allentown, the expenses to Bristol will be as follows, viz:

Mining,	$ 30
Rail-road from Beaver Meadow to Allentown, 50 miles,	75
Toll on Lehigh canal from Allentown to Easton,	22½
	$1 27½
Toll on Delaware division,	30
Freight from Allentown to Bristol, 78 miles,	78
Contingencies,	30
	$2 65½

The nett income upon 100,000 tons of coal sent to market according to the plans before suggested, will be as follows—

	M	
By the rail-road to Mauch Chunk,	20	$ 70,000
Allentown,	50	135,000
Easton,	66	150,000

The respective expenditures will be nearly in proportion to the respective distances of rail-road. Any variation from this rule will rather be in favor of the longest roads.

It is fortunate for the operations of the company, that these plans of work do not conflict with each other and that a rail-road on the shortest distance will become an essential part of that for either of the longer distances; the work may therefore progress without waiting for a determination as to the ultimate plan to be adopted.

It may be observed in conclusion, that this minute exhibit of the affairs and further prospects of this company has been given, with a view of making known to all the stockholders such facts as will enable them to understand and protect their interests. In the hope too, that it may induce stockholders to hold their stock until a full development of the enterprize shall be made by the introduction of their coal to market.

A temporary reduction in the price of coal ought to be no cause for discouragement, when it is considered, that it cannot be permanently reduced below the cost of mining and transportation, with some addition for its value in the mine; and the Beaver Meadow coal may be mined and brought to market as cheap as any other, and when there, is worth as much more, as must ensure a profit to the company.

It will be perceived that no account is made of the proceeds of tolls on the rail-road for general transportation beyond a sufficient sum to meet the expenses of repairs of the road. There is the best reason to believe, however, that this item of income will be far above the estimate, especially if either the Allentown or Easton termination is adopted.

The whole economy of this undertaking may be comprehended in cheapening the expense of transportation, and to this object, the board promise to devote their undivided attention.

By order of the Board,

S. D. INGHAM,
President.

APPENDIX.

HARRISBURG, Jan 3d, 1833.

S. D. Ingham, Esq., New Hope,

Dear Sir,—Your favour of the 31st ultimo reached me yesterday.—In reply I have only to state that our road is exactly 20 miles long, that we had to contend this year with many difficulties, such as a new road, imperfect wagons, unskilful drivers, &c.; and that as we have not made up the accounts of the year, we cannot ascertain exactly what our transportation costs us; but that part of it was done on contract (we furnishing the wagons and I believe the oil) at thirty cents per ton or one and a half cents per ton per mile; I have reason to believe the contractors were satisfied with their bargain, having never heard any thing to the contrary. The allowance for the use and wear and tear of the wagons would we think be amply compensated by 5 cents per trip, or one quarter cent per mile per ton. Upon the whole we feel sanguine of being able next year to effect our transportation for 1½ cent per ton per mile, *including* an allowance for the repair and wear of the wagons, for accidents, oil &c. This would apply to horse power. We expect however to use steam power, and hope to do so with economy. But upon this point we have no experience as yet, our road is a constantly descending one with a fall of 400 feet in 20 miles, averaging of course 20 feet per mile—we use wagons which weigh about one ton, and carry when well loaded three tons, and when fully loaded about 3¾ tons, on an average 3 tons. The usual load for a horse was at first three wagons, of late it has been more frequently four, especially in all cases when we employed contractors. The load was therefore descending about 16 tons (including the weight of wagons) and ascending about 4 tons, our curves are that, our road has suffered no injury from the travel.

If there is any other point on which I can communicate any information I will cheerfully do so.

I remain with respect, your ob't. st.

(Signed) W. H. KEATING.

Extract from the Report of the President and Directors of the Baltimore and Ohio Rail-road Company—page 120.

"During the period that this road has been opened to Frederick, embracing a winter of almost unprecedented severity, the intercourse has been sustained without interruption, and the communication for passengers has been maintained with rarely any deviation from the speed of 10 miles an hour."

For the purpose of ascertaining, practically and conclusively the applicability of steam power upon this road, and with the further view of testing its comparative expense and advantages with animal power, a series of experiments was, on the 21st August, instituted and continued for the space of thirty days."

A locomotive steam engine, the "Atlantic," which had recently been constructed by Messrs. Davis and Yartner, of York, Pennsylvania, was employed for testing this important and interesting question.

This engine weighed 5½ tons exclusive of water,—it had two cylinders, of 10 inches diameter each, with a stroke of 20 inches, and in order to increase its velocity, it was geared in the ratio of 2 to 1, working on road wheels of 3 feet diameter. The "Atlantic" being intended for a high speed, its operations were accordingly directed to transportation of passengers between Baltimore and the foot of inclined planes; it passed twice over that portion of the road daily, being a distance of about 80 miles, and transported the regular train of cars engaged in that business, consisting generally of five cars, carrying, according to the extent of the current business of the day, from 50 to 100 passengers—the load weighing exclusively of the engine and tender, about 18 tons. Throughout the line, this traversed, curves are of frequent recurrence, several having a radius of 400 feet and the grade of the road, with the

exception of 18 miles, is undulating,—the extreme ratio of ascent being 47 feet per mile. The fuel was anthracite coal.

The operations of this engine were continued to the termination of the period designated for them, with the most triumphant success. The speed of 10, 12 and 15 miles, to which considerations of prudence had limited its average performance, was uniformly maintained, in extreme curves, as well as on extreme ascents;—neither of which produced any perceptible delaying effect, the steam was always redundant.

Mr. Gillingham the superintendant of machinery of this company, under whose directions the above experiments were made, has furnished the following details, viz:—During the space of the thirty days, the operations of the engine were suspended for only seven days, which were consumed in repacking the piston, and in some unimportant repairs upon the wheels and carriage; the daily consumption of water was 1700 gallons, and of coal one ton; the services of a principal and an assistant engineer were required:—producing the following aggregate of daily expenses, viz—

ACTUAL EXPENSES.

One ton anthracite coal	$8 00	
Engineer, assistant and laborer	3 50	
Expense of oil and packing	50	
		$12 00

ESTIMATED EXPENSES.

Repairs and wear of engine, and interest of its cost	$3 00	
Expenses of water stations	1 00	
		$4 00
Total expense of engine per day		$16 00

This engine, in its daily routine, accomplished the same extent of work that, with animal power, is now performed at the following expense, viz:

42 horses, including their keep, interest on cost, their animal depreciation, harness and shoeing 50 cents per day	$21 00
Car drivers and stable keepers 12 at $1	12 00
Total expense of animal power per day	$33 00

The above statements of the comparative expense of steam and animal power, result in this single instance in a saving of $17 per day, or of upwards of $500 per month.

It has been shown that the Atlantic was employed in the traction of 5 cars, weighing about 18 tons, at an average speed of about 12 miles per hour. This performance has not been stated as the extent of the power of that engine; it was the speed assigned to it as being the limit of that description of business which the company required to be performed. On several occasions, much greater results were exhibited—thus a load of 30 tons, exclusive of the engine and tender, has been repeatedly drawn from Baltimore to Ellicott's miles, a distance of 13 miles within an hour—the road for 5 miles ascending from 13 to 21 feet.

The Atlantic having been constructed with reference to speed, of course a portion of its utility was merged in its velocity. Messrs. Davis and Yartner, to whose skill and perseverance this company are indebted for their first successful exhibition of steam power on their road, are, however, now engaged in the completion of another engine, formed exclusively with reference to its force of traction. This engine is expected to carry 100 tons from 6 to 8 miles an hour.

STATE LOAN INVESTIGATION.

The following is the testimony taken before the committee appointed to investigate the State Loan, in the Senate Chamber, on Thursday the 28th inst.

The following proposals for taking the whole Loan, were read.

A letter from E. Chauncey, agent for the Bank of Pennsylvania, dated March 20, 1833, offering to take the loan, and pay a premium of $10 on every $100 of stock.

A letter from Jesse R. Burden, dated March 20, 1833, offering to take the loan on a premium of $12 15 on every $100 of stock.

A letter from S. Chew, dated Philadelphia, March 18th, 1833, proposing to take the loan at a premium of $12 12½ for every $100 of stock.

These letters were all endorsed "March 20, received at 4 o'clock—rejected."

These were all that were received the 1st day.

The Secretary of the Commonwealth was then called and examined on oath.

Question by the Committee. Why were all the proposals, on the 1st day, rejected?

Answer. The Governor said that the premiums offered were not high enough; and he was disposed to get as high a premium as he could. These were the reasons of the Governor. We both concurred in the opinion that the Governor had a right to reject the proposals if he thought they were not high enough.

The Secretary here read a letter, dated March 21st, from himself, to Jesse R. Burden, stating that he was instructed to give these persons, at the seat of government, desirous of taking the loan, notice that all the proposals were rejected, and that new proposals would be received until 4 o'clock, P. M. and that such information was given to all the bidders.

Two letters were then read, dated March 21, 1833—one from E. Chauncey, agent of the Bank of Pennsylvania, offering $13 50 premium on every $100 of stock—the other from J. R. Burden, offering $13 51 premium on every $100 of stock, for the whole loan.

The letter from the Secretary of the Commonwealth to Dr. Burden, stating that his proposals were accepted, was read.

Examination of Secretary M'Kean continued.

Question by the Committee. How did you receive the proposals the second day?

Ans. About 4 o'clock I received the proposals. Mr. Chauncey handed his in first, and Dr. Burden a few minutes after. They were enveloped and sealed.

Ques. After the proposals were opened, was there any difference of opinion as to which the loan should be given—as to which offer would be considered most beneficial to the State?

Ans. After they were opened, the Governor directed me to invite them both in. They both came in—the proposals were read to them—had a little pleasant conversation on the subject. Mr. Chauncey expressed no dissatisfaction.

Ques. Had you any idea or information what would be bid by the Bank of Pennsylvania?

Ans. Not at the time. I had inferred that the Bank could not give over their first bid. I had no knowledge of what the Bank would bid.

Ques. Was there any conversation between them whether the offer of the Bank or Dr. Burden was the best for the state?

Ans. Not that I recollect at the time. The Governor appeared to be desirous to give it to the Bank. I thought so at the time.

Ques. Had you taken the trouble to ascertain whether the premium of $13 51 on the $100, considering the time the loan is to run, is equal to $14 08 given last year?

Ans. I have not, but from the general view of the subject, I thought it was.

Ques. Was the time, being two years shorter, the cause of the premium being smaller?

Ans. I did not think so. It was to be attributed to the fluctuation of the market. This year it might be lower and the next year higher.

Ques. At what time is it the practice to receive the premium?

Ans. At the time the instalments are paid.

Ques. Has it been the practice to require any security of those to whom the loans are given?

Ans. It has not. Nothing has been required from individuals.

Ques. Has it not been the custom in those that apply for loans to state that they would give such a premium if a responsible bid was made by others, higher than a previous bid?

Ans. It has been the custom. It was what was called a hypothetical bid.

Ques. Do you always receive individual bids?

Ans. Always.

Ques. Do you make it your business to inquire into the situation of such individuals as to respectability and responsibility?

Ans. I conceive it to be our duty to do so, to see if the State was likely to be furnished with money when she might want it.

Ques. Has any proposal been rejected on account of the supposed want of responsibility?

Ans. I do not know. I have been absent one or more times when proposals have been opened.

Ques. Are you under any impression that the state loan might be jeopardized by giving it to an individual who is unacquainted with money concerns?

Ans. It might be so, to be sure.

Ques. From the character and standing of Dr. Burden, was it your opinion that he was, or now is responsible for this loan?

Ans. I did not consider him as acting on his own responsibility, but for others—for capitalists—as an agent.

Ques. The question is, do you consider him, from his character and standing, a responsible person for the loan?

Ans. Yes, I so considered him; but I believe he was bidding for capitalists.

Mr. Henry Buehler, Clerk in the Secretary's office, was called and sworn, and corroborated the testimony of Secretary M'Kean, as to what transpired in the office about the time the loan was taken.

Question by Dr. Burden. Do you recollect of my being here on a former occasion, when loans were taken?

Ans. I do—last summer, I think.

Ques. Do you recollect about my complaining about a contingent bid?

Ans. I do.

Question by Mr. Boyd. I understand that Dr. Burden has heretofore been a bidder?

Ans. He was.

Ques. Did he bid in his own name?

Ans. He did not, I think.

Dr. Burden said that who he bid for was not known.

Mr. Buehler did not know that he did bid, but he knew that he wanted to bid.

Question by Dr. Burden. Did I hand you sealed proposals at the time?

Ans. I think you did. Hypothetical bids were not forbidden then.

Question by Dr. B. Did you know that I bid, or was it only a supposition?

Ans. It was only a supposition.

The Secretary of the Commonwealth was again called.

Ques. By the committee. Was there more than one proposal by either of the applicants, and if so, by whom?

Ans. This fact must have been obtained from some other source. I have never stated it to any man living, but there were two proposals in Mr. Chauncey's letter—one within the other. The first stated that if it was accepted, the other should not be opened.

Ques. Can you state what rate of premium was offered in the first?

Ans. I cannot recollect. It was something over eleven dollars premium on the $100—eleven dollars and some cents. I handed it to Mr. Chauncey at his request.

Ques. Were such proposals ever offered before?

Ans. They have been.

Mr. James Leslie, Cashier of the Pennsylvania Branch Bank at Harrisburg, was called and sworn.

Ques. By the committee. Will you state what you know respecting the taking of the late loan.

Ans. I was aware that the bids offered the first day were all rejected, and that there were two bids offered the second day, and that Dr. Burden's bid being the highest, the loan was given to him. Mr. Chauncey was perfectly satisfied with the officers of government, and considered the transaction fair and honorable, and he requested me, if he heard any insinuation to the contrary, to repel them, and to state his entire approbation of the proceeding. He stated to me that it was impossible that Dr. Burden could have known any thing about his bid.

Ques. By Dr. Burden. Do you ever recollect an instance when loans have been taken before, where the proposals were as near as this?

Ans. I did hear of one. I believe that in one instance Mr. Chauncey has taken a loan where there was only one cent difference in the bids.

Ques. Was it the Ohio loan?

Ans. I believe it was, but I am not positive.

Ques. Did Mr. Chauncey appear to regret that he did not get the loan?

Ans. He did not. He appeared in good spirits about it.

Ques. Are not the stocks in our market regulated by the prices of stocks in Europe?

Ans. I believe they are.

Ques. What do you suppose the relative value of the present state loan to be, to those of last year, the time it is to run being two years less?

Ans. About three-fourths per cent. per year, less.

Ques. Would it not have been better for the state to have taken the bid of the Bank, rather than the bid of Dr. Burden?

Ans. It would depend on circumstances.

Ques. Would it have had a tendency to destroy competition for future loans, if it had been given to the Bank?

Ans. I would think so.

Ques. Do you know whether the Bank has lost or gained by her former loans?

Ans. I have not ascertained that definitely.

Mr. White, a director of the Bank of Pennsylvania was examined under oath.

He stated that he had conversed with Mr. Chauncey, both before and after the bids, and that he considered the whole transaction fair and honorable.

Ques. By the committee. Do you think the premium of $13 51 on the present loan, equal to $14 08 on the loan of last year?

Ans. I think it is about.

Ques. What effect would it have had on individual competition, had the late loan been given to the Bank?

Ans. I think it would have had the effect to destroy individual competition.

Ques. Can you tell how much of the state stock that has been taken by the Bank of Pennsylvania is now held by it?

Ans. I think about half a million.

Ques. By Dr. Burden. Was it not the general opinion that the loan was taken at as fair a price as could be got for it?

Ans. I think myself that it is a very fair price.

Mr. W. P. Farrand was called and sworn.

Ques. By the committee. Had you any conversation with Mr. Chauncey on the subject of the loan, and if so, what?

Ans. The substance of our conversation was on the amount of his offer, and that he did not get the loan.

There was nothing unfair alleged. It was only a general conversation, as he was about going out in the stage, and he seemed to think that the stock was taken high.

Ques. Had you any intention of making proposals, for the loan?

Ans. I had been authorised to make proposals.

Ques. Did you think of proposing as high as $13 51?

Ans. I did not. Stocks had fallen in Europe about seven per cent.

Ques. What is your opinion respecting the price. Is it as high as the stock of last year?

Ans. I consider it as high taking into view the depression in Europe.

Ques. What was the cause of the depression?

Ans. The disturbance at the South. Nullification, and the agitation of the Southern states.

Ques. As far as your information goes, will stocks be permanent or varying, in market?

Ans. My information leads me to believe that they will be fluctuating.

The above was the principal or most important' part of the evidence taken in the case. The committee reported in favor of the transaction, clearing all concerned from any attempt at fraud.*—*Harrisburg paper.*

THE MILITIA SYSTEM.

Mr. Rogers, from the committee on the militia system, to whom was committed bill number 234 from the House of Representatives, entitled, "An act supplementary to an act passed 22d April, 1832, an act for the regulation of the militia of this commonwealth, and several supplements thereto."

Reported, That after a careful examination of the subject, they are unanimously of opinion, that it would be inexpedient to repeal the 22d and 23d sections of the present militia law, which provides for company and battalion trainings throughout the commonwealth.

Your committee forbear to go into detail upon this important subject at this late period of the session. They are, however, fully aware, that the recommendation of this subject to the attention of the legislature by the Chief Magistrate in his annual message, the proceedings of the military convention in 1832†, and numerous public meetings, have been caused by the total inefficiency of the present system, and the abuses committed under it, and that a very large portion of the citizens of this commonwealth, including the military, are anxious for an entire reformation, not merely for the purpose of abolishing militia parades, which in many portions of the state are demoralizing to society; but for the purpose of giving a permanent support and encouragement to our spirited and patriotic volunteers.

It will be recollected that in the early part of the session, the chairman of the military committee reported a bill based nearly upon the same principles as the one from the House of Representatives, with the single exception that it provides for the encouragement of the volunteer system, which was pretty fully discussed and negatived.

To pass the present bill would lead to innumerable difficulties, and be very mischievous in its consequences, for while it provides for the repeal of the 22d and 23d sections, it continues in full force and effect the rest of the law providing for the pay of the Brigade Inspectors, Musicians, and numerous other incidental expenses. In addition to this, it would in a few years break down and destroy the volunteer system.

Pennsylvania has just cause to be proud of her 30,000 volunteers, who are equipt at their own expense, and who devoted their time and money in this patriotic and laudable undertaking, without any compensation, and scarcely any encouragement or protection, and it would now seem to be an act of strict justice on the part of the legislature, promptly to give them some protection or relief, for without it, and the repeal of the two sections provided for in the bill, the inducement to volunteer would soon cease to exist.

In addition to this, your committeee are of opinion that a constitutional objection would interpose, as on reference to the 20th section of that sacred instrument, it says;—"The freemen of this commonwealth shall be armed and disciplined for its defence. Those who conscientiously scruple to bear arms, shall not be compelled to do so, but shall pay an equivalent for personal service." Refraining from going into an argument upon this constitutional objection, which has been so fully and ably discussed in the Senate, at the commencement of the present session, your committee therefore report bill No. 280, with a similar title, and without amendment, and recommend it to be negatived.

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Mr. Ringland, from the committee on the judiciary system, to whom was referred the petition of the *first regiment of Fayette Volunteers*, of the county of Fayette, Reported:

That they have duly considered the prayer of the petitioners, which embraces the following points:

First, that the members of said regiment may be required by law to meet for training and review four days in succession in each year, at such times and places as the commissioned officers shall appoint, and that when so met they shall perform camp duty. Secondly, that the fines may be raised to such an extent as to ensure the attendance of officers and members. And thirdly, that they may be protected from the immoral influence of intemperance by prohibiting the attendance of Sutlers.

In regard to the first part of the petition, your committee are of opinion that the regiment have power under existing laws to do that which they ask the Legislature to authorise them to do. By the latter clause of the 35th section of the act of 2d April, 1822, volunteer corps are authorised to make such by-laws as to fix on their times and places for parade and trainings, and such other matters as may be necessary for their better government, and by the 6th section of the 4th of May, 1832, it is provided, that when a regiment or battalion of volunteers shall agree to do camp duty, at least three successive days in each year, they shall be entitled to draw tents and other camp equipage. The committee therefore believe, that when a corps of volunteers agree to perform camp duty a number of days in succession, the officers have the same power to enforce their commands during the night as in the day time, and all military usage appears to sustain this opinion.

On the second part of the petition, respecting the power of raising the fines for non-attendance on days of training, your committee are of opinion that for all extra days of training over those required by law, volunteers have power by their by-laws to regulate their fines and penalties in such manner as may best promote the object of their association, and as partial legislation in such cases ought to be avoided as much as possible, the committee are not in favour of passing special laws, unless where greater inconvenience exists than that complained of by the petitioners.

The present law respecting Suttlers, if properly enforced, seems to be sufficient to prevent any immoral influence from that source, as it is in the power of the commanding officer to prohibit the sale of ardent spirits or other liquor at any parade, and by appointing such parades and encampments out of the reach of any licensed tavern, the corps themselves can prevent the existence of this evil.

The committee, therefore, submit the following resolution:

Resolved, That the committee be discharged from any further consideration of the subject.

* See page 221.

† See Reg. Vol. ix. page 43, 50.

POTTSVILLE.

MANUFACTURES.—The inducements to the establishment of manufactories in this region are so numerous and have so frequently been pointed out, that we are surprised at the backwardness of those whose interests evidently lead them to seek out the most favorable locations. It is a well-known fact that this region is peculiarly adapted and seems designated by nature for manufacturing purposes, combining in abundance and perfection the advantages of the indispensable agents, *fuel and water*—either of which may be successfully employed. The expense of procuring the first would be obviously inconsiderable, because the most inferior or refuse qualities of coal would answer all ordinary purposes. But if water power be preferred, or should it be deemed expedient or practicable to unite the two agencies, the element is close at hand, in sufficient quantities, as may be seen on several large streams in this vicinity. Of the various branches of manufactures we should suppose that those of cotton and iron, more especially the former would best succeed in this region. The transportation from the sea-board of a hundred or more bales of cotton in the course of the navigable season, could be effected at a small expense, because canal boats frequently returning empty, would demand but a low rate of freight. The cost of transportation calculated upon a yard of cotton muslin would be quite trifling, and the raw material thus obtained could be converted into cotton fabrics by means of steam power, cheaper than in any part of the eastern states.

First, because the number of hands, and especially that part consisting of women and children required by cotton machinery, would readily be supplied by the families of miners and laborers.

Secondly, because the price of fuel would be so much reduced as alike to exclude both comparison and competition. There is also a consideration to be mentioned which would materially affect the rate of wages, both in the manufacturing and coal trades: we mean the universal and constant employment which would be thus afforded to every member of a working family. This general industry would produce a proportionable diminution in the price of labor, and in this manner all parties interested would be reciprocally benefitted. And thus manufactures and the coal trade would flourish together and mutually contribute to each other's prosperity.

The next point for consideration is the demand for cotton goods, which is invariably co-extensive with the increase of wealth and population. The consumption of this species of domestic manufactures is now almost incalculable in this district, and the present ratio of consumption is rapidly augmenting. An immense district of territory extending along the shores of the Susquehanna and its tributaries, inhabited by a numerous population would, from this place, be supplied with cotton manufactures. The markets of Philadelphia, Baltimore and New York would hold out no inducements to western dealers, while an article of equal quality and on cheaper terms, could be purchased in this neighborhood. These are a few of the considerations hastily presented, demanding the serious attention of manufacturers, which sooner or later will have their natural and irresistible force and influence in converting this into a manufacturing region. In older countries similar causes have produced this result, and we should like to know what can make a difference in their operation and effect in this country? We have no hesitation in predicting that the first cotton manufactory erected in this region, whether by individual enterprise or the efforts of an incorporated Company, will enrich all of its proprietors; because the first will stand without competition. Every member of the community would feel bound to patronize it to the extent of his ability, and watch over and protect its interests.—*Miners Journal.*

CONESTOGA NAVIGATION COMPANY.

Report upon the petitions relative to annulling the charter of the Conestoga Navigation Company. Read, April 8, 1833.

Mr. M'Culloh, from the committee on the judiciary system, to whom were referred the petitions of sundry citizens of Lancaster county, praying for the passage of a law to annul the charter of "The Conestoga Navigation Company," made the following report, viz.

That it appears from the documents, that the said company was chartered in pursuance of an act of Assembly, passed the 3d of March, 1825; that the stock subscribed and paid in, (except a very small part,) amounts to $64,800; that in the construction of the work, (which was completed in 1829,) and the necessary purchase of property, payment of damages, &c. the company have expended about $100,000. In the progress of the work, the company have borrowed $35,000, and have mortgaged their property, including their works for the payment of the debt. The extraordinary ice flood of 1832, destroyed some of the locks and dams, and, in the embarrassed state of the company's finances, the injuries have not been repaired as promptly as they ought to have been, and 'tis said that the creditors are proceeding to enforce payment of their debts. In this condition of the works, complaints have arisen on account of the obstructions in the fords across the Conestoga, and also from a dispute which has existed between the county and the company, on the subject of the erection of bridges over the stream; and for these reasons, the application has been made to annul the charter of the company.

Under this state of the facts the committee are of opinion that the passage of such a law, even though it should not be objectionable on other grounds, would be harsh towards the company, and unjust to the creditors. Difficulties have occurred in raising funds to repair the damages done to the works, by one of the greatest and most unusual floods that has occurred for many years: For this misfortune, the company cannot be held responsible, but are entitled rather to the sympathy and aid of their fellow citizens. It is still possible that their property may be redeemed, and that even the creditors may be induced to aid in relieving them, as perhaps the only mode of eventually recovering their debts. At all events, the committee deem it inexpedient to jeopard so many important interests, by legislating on the subject.

The committee deem the subject brought before the Legislature, by these petitions, one of deep interest, and worthy of very grave consideration, as it involves questions, not only of expediency, but of constitutional power.

Is it within the power of the Legislature, under the constitution of the United States and of this state, to take from private corporations their chartered rights, by *an act of Assembly?* Do not such powers more properly belong to the judiciary department, and can the Legislature, with propriety, go farther than to provide a general system, and to confer jurisdictions on the appropriate courts, for the trial of questions of forfeiture? Our constitution declares, in the language of Magna Charta, that no man "can be deprived of his life, liberty or property, unless by the judgment of his peers or the law of the land;" and for the protection of the rights and liberties of the people, the judical department is established, distinct from the Legislature, as they both are from the Executive. Investing the "Legislative power" in a Senate and House of representatives, only (for the mere qualified negative given to the Governor, is a check, but nothing more,) it may be well doubted, whether the framers of the government ever intended, (independent of the express restrictions of the constitutions,) to confer on the Legislature the uncontrolled, sometimes called the omnipotent power of the British parliament, and whether it was not rather the design to limit it to acts of a purely legislative character. The parliament is composed of kings, lords and

commons, and possesses the whole sovereignty of the country. From the king, (in theory,) proceeds the administration of justice, through the medium of his courts, as they are called; any act, sentence adjudication of parliament, therefore proceeds from, and includes in it, the exercise of the three distinct powers of our government, viz: executive, legislative and judicial. Indeed it is declared by English writers, "that the power and jurisdiction of parliament is so transcendent and absolute, that it cannot be confined, either for causes or persons, within any bounds." That "it can do every thing not naturally impossible," that "what parliament doth, no authority on earth can undo;" that "it is the highest and greatest court of the kingdom," and if it abuses its powers, "the subjects are left without all manner of remedy." [see 1 Blackstone, 160. 161] We know it is the settled doctrine in England, that charters may be repealed or annulled by act of parliament, and probably, from this doctrine, may have been derived the idea, that our Legislature have the same power. But surely it cannot be for a moment admitted, that our Legislature possesses the attributes of sovereignty claimed by parliament, or that in this country, under our free systems of representative government, any Legislature is omnipotent, uncontrolled, or vested with despotic power. However, with all this unlimited power of parliament, it is a remarkable fact, that in England, the rights of private corporations have been respected; questions, respecting their forfeiture, have been left to the judicial tribunals, and scarcely an instance has occurred for the last century of a private corporation being annulled by statute. It has also been decided by their courts, that although the king can grant a charter by virtue of his prerogative, yet he cannot revoke or alter it, without its consent, nor can its forfeiture be declared, but by trial and judgment. [3 Burrows, 1656; 3 Term Rep, 244.]

If then the Legislature has only legislative power, (and the very fact of judicial power being specially conferred on it in cases of the trial or removal of judicial and other officers, seems to strengthen this construction,) can an act of Assembly, declaring that charters have been forfeited, and therefore they are annulled, be considered as a purely legislative proceeding? On the contrary, it is a judgment; it is, in every thing but the form, a judicial sentence; and the Legislature might, with the same propriety, pass an act, (it could not be called a law,) declaring that an individual had forfeited his life, liberty or property, and direct that they should be taken from him!

When a charter has been granted to individuals, by an act of Assembly, and they have acted upon it, and invested their property under it; the act is a contract, the obligation of which the Legislature cannot impair, as has been decided by the Supreme Court of the United States, a tribunal entitled, in every respect, and on every account, to the highest confidence of the people of this country. [See Fletcher vs. Peck, 9 Cranch; and Dartmouth college vs. Woodward, 4 Wheaton.]

In the last case, it was laid down by Judge Washington, "that the subjects of the grants were not only privileges and immunities, but property, or which is the same thing, the capacity to acquire property." If, then, the grant to corporations is property, it cannot be taken from them, according to the constitution, unless by the judgment of their peers, or the law of the land." It is, however, supposed by many legislators, without sufficient reflection, that taking away property of private rights, by act of Assembly, is doing it by "the law of the land," because it has the forms of a law: but this is contrary to the well-settled construction of those words. Such an act is not considered as a law, but as a sentence of a tribunal, acting as to the particular case, in a judicial capacity. [1 Blackstone, 44.] It includes in it all its characteristics of a judicial proceeding, except the form, and presents the curious anomoly of a legislative body judging, deciding, and depriving by act, and that too without such a hearing as courts are bound to give. But it is well settled, that "the judgment of his peers," means the trial by jury, and "the law of the land," means some general law, a general rule operating alike on all the community, and to which every citizen must alike submit. It means, as Lord Coke says, simply "by due course and process of law." In the decision, therefore, of all questions where the rights and franchises, or property or corporations are to be affected, they are entitled to the constitutional privilege of trial by "their peers," or, "by the law of the land," in its general sense. The trite saying, "that corporations have no souls," has been much and often misapplied, and is often figuratively true: It is a very bad foundation for the pretended right to legislate away their property, without hearing or trial. A corporation is composed of individuals who have souls, and hearts, and feeling to be operated on, like those of other citizens, and entitled to the same regard. The charter only confers a convenient name, under which the individuals act, and the only advantage they obtain is, that of being responsible for no more than their subscription of stock informs the public they have invested in the establishment, whatever may be its object. The Legislature ought to be extremely cautious in the grant of charters, and perhaps they ought not to be granted, except for some purpose, to the accomplishment of which, individual enterprise is not adequate, or which is of such a general and public nature, that individuals could not be expected to engage in it. But, when granted, they should have the sacred shield of the constitution and law thrown over their rights, and they should be protected from violence, with the same care as the rights of other citizens.

With these views of the subject, the committee are of opinion, that measures should be taken to invest the courts with power to try and determine, "by due course of law," all questions respecting the forfeiture of charters by misuser, nonuser, or abuse of their privileges. The reservations in acts of incorporation, of a power in the Legislature to repeal the law, "if the corporation shall misuse or abuse its privileges," or, "if it should prove injurious to the commonwealth," can be no objection to the proposed course; for still there ought to be a competent tribunal to try the facts of abuse or misuse of the privileges, or the causes which may have rendered them injurious. It is indeed important to the public interests, that the Legislature should not be involved in judicial investigations, for which, composed as it is of two distinct bodies, and governed by no known or established rules of action or proceeding, it is by no means well calculated. Besides, if the Legislature assumes the power to hear, try, and determine such questions, it will impose duties on the members, for the performance of which they were not elected; and, with the great number of corporations now in existence, and yearly increasing, if the trials are to be had before the Legislature, it is very questionable whether the ordinary business of legislation, already so great and laborious, could be done at all. There can be little doubt, that many complaints against corporations must and will arise from various causes, some well founded, and some not; and for the sake of justice to the parties, for the sake of the Legislature itself, and to avoid the interminable difficulties and enormous expense of legislative investigation, it is important that some convenient mode of trial should be prescribed.

This view of the subject appears to have been heretofore adopted and acted upon by the Legislature; and it is with great satisfaction, the committee refer to the case of the Harrisburg canal, fire insurance and water company, as stated in the able report made to the Senate on the 27th March, 1826. [See the Senate Journal, p. 524.] In that case, although the committee were perfectly satisfied that the charter had been forfeited, and although the right was reserved to the Le-

gislature of resuming the franchises of the company, yet they recommended it to the Legislature, to leave "the rights of the company to be adjusted in the forms of law, and by the ordinary tribunals of the country." In pursuance of which, a special act was passed, directing the Supreme court to issue a scire facias and try the cause, which was done, and the charter was repealed. It is only to be regretted that a general system had not been adopted at that time.

Under our present judicial system, the quo warranto is believed to be the only proceeding known to our laws. It is a summary proceeding in the Supreme court in bank, and confined to Philadelphia, where alone that court has original jurisdiction, and therefore inconvenient and burthensome, its very difficulty and inconvenience forbid its use. It is, besides, a remedy which does not always, nor necessarily, involve the question of forfeiture of the charter, for officers may not have a right to hold their offices from personal disqualification, or other causes, which do not impair the charter, and the judgment may, or may not, turn on that question.

The other mode of proceeding in England, by scire facias, to repeal the letters patent, would seem to be the most direct and proper course, as it gives on its face notice of the facts to be tried, and furnishes ample means for settling all questions of law and fact, in the tribunals which are peculiarly appropriated to the decision of both. It is a writ, issuing out of, and returnable in, chancery; the defendants answer and plead, and if an issue of fact is formed, the chancellor is obliged to remit the records to the common law courts, for the investigation of a jury. When the facts are thus ascertained, the record is returned into chancery for final adjudication of the chancellor, who, in important cases, calls to his assistance, the judges of the other courts. [See 2 Lilly's Entries, 411, &c. 418, 4 Inst. 79. 1 Pr. Wms. 207, 1 Mad. Chan. 4, 5.] As we have no court of chancery, it is presumed that this proceeding cannot be adopted by our courts, without a species of judicious legislation which had better be avoided. But as corporations are becoming so very numerous, and finding their way into every quarter of the state, it must be anticipated that, in many instances, they may abuse their privileges, become injurious to the public, and give cause of complaint. It is, therefore, the duty of the Legislature to furnish some convenient mode of determining such questions; and with this view, if there had been sufficient time for maturing the details of a system, the committee would have reported a bill: but the press of other business, and the importance and intrinsic difficulty of settling the details of a plan, have prevented them from doing more than suggesting the outlines for the consideration of the public and the next Legislature. They therefore suggest the propriety of vesting in the courts of Common Pleas, the power of proceeding by scire facias, as is done in chancery, form the issue, try the cause, and render judgment, reserving to the parties the right of appeal or writ of error to the Supreme court; and even then to require, before a final declaration of forfeiture of the charter, the revision of the sentence by the Legislature, if deemed expedient. This limitation would protect the rights of the corporators, and enable the Legislature to re-grant their charters, if the cause of forfeiture should not be of a serious or aggravated kind. The writ ought to issue in the name of the commonwealth, on the complaint of individuals by petition to the court, setting out at length the specific charges of abuse or misuser; and to guard against vexations and frivolous prosecutions, the complainants should be required to give security for costs. With a system of this description, the public would be protected from many evils which may arise from the injudicious or improvident grant of corporate powers and privileges. It would be well, also, to grant to the courts, the equity powers to compel the stockholders in banks and other corporations to account, and to pay the debts of the institutions, at least to the extent of their subscriptions of stock. This power has been greatly wanted in the case, particularly of insolvent banks, as well as in some other instances.

These suggestions are respectfully submitted to the House, with the hope that they may be found worthy of attention hereafter, and result in the adoption of some more perfect plan of proceeding in the cases referred to, than now exists.

Resolved, That the committee be discharged from the further consideration of the petitions referred to them, and that the subject be referred to the early attention of the next Legislature.

The corner stone of the new church of St. Michael's' in Kensington, was laid on Easter Monday, at 4 o'clock, P. M. by the Right Rev. Dr. Kenrick, assisted by the Rev. Dr. Hurley, Rev. John Hughes, Rev. Terence J. Donaghoe, (Pastor of the intended church) Rev. Jeremiah Keilly, Rev. Wm. Whelan, Rev. Nicholas O'Donnell, O. S. A., Rev. Tolentine De Silva, Rev. James Foulhowze, Rev. Francis Gartland, and four young clerks. The Trustees and building committee accompanied the procession, which was conducted with perfect order, notwithstanding the immense crowd that had assembled to witness the ceremony. After a preliminary discourse, explanatory of the ceremonies, a collection was taken up in aid of the funds, to the amount of $225.

Its dimensions, ninety feet by sixty.

In the Corner Stone a cavity was prepared for the reception of a leaden box, containing some late newspapers, several coins of the United States of the present year, a roll of parchment on which were written the date of the ceremony, the names of the builders, the present Sovereign Pontiff, Gregory XVI., the names of the Bishop and Coadjutor Bishop of Philadelphia, the President of the U. States, the Governor of this State, the Trustees and Building Committee.

THE REGISTER

PHILADELPHIA, APRIL 20, 1833.

The present number contains a very interesting and important document which we have copied from a Glasgow paper in relation to canals and rail-roads. By this it appears that the comparative advantages of these two modes of travelling have heretofore been very fallaciously estimated. Experiments, continued sufficiently long to test the accuracy of their results, have been made. From these it would appear, that boats may travel on canals at the rate of ten or twelve miles an hour without any injury being produced to their banks, as it has heretofore been conjectured would be the case from boats moving with a greater velocity than four or five miles an hour. The very great difference of expense between the travelling on canals and rail-roads is, according to this document, a very important consideration—this, added to the gain produced by the increased velocity which may now be acquired upon canals beyond former calculations, must produce a more favourable change of opinion in regard to canals. We think in giving this paper, and others of a similar character, a place in the Register, we are promoting the interests of our state by furnishing information that may be useful in directing to a proper decision, where a question arises as to the expediency of adopting the one or the other mode of improvement.